



VIETNAM NATIONAL UNIVERSITY OF HO CHI MINH CITY
UNIVERSITY OF NATURAL SCIENCES
FACULTY OF INFORMATION TECHNOLOGY

COURSE SYLLABUS

Course Code:	TH112
Title:	Artificial Intelligence
Credits:	4
Workload:	Lecture hours: 3 periods * 15 weeks = 45 periods Laboratory hours: 2 periods * 15 weeks = 30 periods Preparative hours:
Prerequisites:	TH012 - Intermediate Programming A2 TH109 - Computer Graphics TH114 - Graph Theory

Course Objectives :

The objective of this course is to provide students with some basic concepts and skills of Artificial Intelligent in problem solving and searching, especially heuristic methods. Students will also study methods of representing and manipulating fundamental knowledge bases, which are used for Intelligent Systems Development.

Main Text: N/A

References:

1. *Trí tuệ nhân tạo và các phương pháp (Artificial Intelligence and Methods)*, Bạch Hưng Khang - Hoàng Kiếm, Nhà xuất bản Khoa học và Kỹ thuật, Hanoi 1989
2. *Lập trình C cho Trí tuệ nhân tạo (C Programming for Artificial Intelligence)*, 3C soft, Nhà xuất bản Đại học và Trung học chuyên nghiệp, Hanoi, 1990
3. *Problem Solving and Artificial Intelligence*, Jean - Louis - Prentice Hall -1990
4. *Artificial Intelligence*, Patrick Henry Winston - Addison -Wesley 1995
5. *Artificial Minds*, Stan Frankling - MIT Press 1995
6. *Artificial Intelligence, An modern approach*, Stuart Russel, Peter Norvig - Prentice Hall 1995

Course Outline

Chapter 1 Problem Solving Methods

- 1.1 Introduction
- 1.2 Approaching A New Problem Solving Method
- 1.3 General Problem Solving Methods
 - 1.3.1 The Wang Xiao Algorithm
 - 1.3.2 The Robinson Algorithm
 - 1.3.3 The GPS Method
 - 1.3.4 Heuristic Methods

Chapter 2 Solution Searching Methods

- 2.1 Breadth-first search method
- 2.2 Depth-first search method
- 2.3 Heuristic searching
- 2.4 Hill-Climbing Search
- 2.5 K-best search method
- 2.6 Optimum Solution Search Method

Chapter 3 . Knowledge Representing Methods and Expert Systems

- 3.1 Concepts of Knowledge
 - 3.1.1 Introduction to Knowledge
 - 3.1.2 Categorization of Knowledge
 - 3.1.3 Characteristics of Knowledge
- 3.2 Knowledge Representing Methods
 - 3.2.1 Knowledge Representation Using Deductive Rules
 - 3.2.2 Knowledge Representation Using Semantic Networks
 - 3.2.3 Knowledge Representation Using Frames
 - 3.2.4 Object-Oriented Knowledge Representation
 - 3.2.5 Fuzzy Knowledge Representation
- 3.3 Knowledge Processing Methods
 - 3.3.1 Knowledge Transforming Methods
 - 3.3.2 Knowledge Deducting Methods
 - 3.3.3 Knowledge Matching Methods
 - 3.3.4 Knowledge Synthesis Methods
- 3.4 Expert Systems
 - 3.4.1 Concepts
 - 3.4.2 Functionality of Expert Systems
 - 3.4.3 Expert System Models
 - 3.4.4 Expert System Structures
 - 3.4.5 Categorizing the Expert Systems
 - 3.4.6 Constructing an Expert System

Chapter 4 . Machine Learning

- 4.1 Machine Learning and Its Role
- 4.2 Machine Learning Algorithms.
- 4.3 Some Applications in Data Analyzing, Dynamic Knowledge Creating, and Data Mining

Grading

Final exam :

Assignments: